

## 2A, 400V ESD Capability Rectifier

### FEATURES

- High ESD capability
- Glass passivated chip junction
- Ideal for automated placement
- Low forward voltage drop
- High surge current capability
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

### APPLICATIONS

- Switching mode power supply (SMPS)
- Adapters
- Lighting application
- converter

### MECHANICAL DATA

- Case: DO-214AA (SMB)
- Molding compound meets UL 94V-0 flammability rating
- Part no. with suffix "H" means AEC-Q101 qualified
- Packing code with suffix "G" means green compound (halogen-free)
- Moisture sensitivity level: level 1, per J-STD-020
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: As marked
- Weight: 0.09 g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_{F(AV)}$	2	A
$V_{RRM}$	400	V
$I_{FSM}$	50	A
$V_F$ at $I_F=2A$	1	V
$T_{JMAX}$	175	°C
Package	DO-214AA (SMB)	
Configuration	Single dice	



**DO-214AA (SMB)**

SOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	TSD2G	UNIT
Marking code on the device		TSD2G	
Repetitive peak reverse voltage	$V_{RRM}$	400	V
Reverse voltage, total rms value	$V_{R(RMS)}$	280	V
Forward current	$I_{F(AV)}$	2	A
Surge peak forward current, 8.3 ms single half sine-wave superimposed on rated load per diode	$I_{FSM}$	50	A
Junction temperature	$T_J$	- 55 to +175	°C
Storage temperature	$T_{STG}$	- 55 to +175	°C

<b>THERMAL PERFORMANCE</b>			
<b>PARAMETER</b>	<b>SYMBOL</b>	<b>LIMIT</b>	<b>UNIT</b>
Junction-to-lead thermal resistance	$R_{\theta JL}$	26	°C/W
Junction-to-ambient thermal resistance	$R_{\theta JA}$	73	°C/W
Junction-to-case thermal resistance	$R_{\theta JC}$	27	°C/W

**Thermal Performance Note:** Units mounted on recommended PCB (10mm x 10mm Cu pad test board)

<b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted)					
<b>PARAMETER</b>	<b>CONDITIONS</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>MAX</b>	<b>UNIT</b>
Forward voltage per diode <sup>(1)</sup>	$I_F = 1\text{A}, T_J = 25^\circ\text{C}$	$V_F$	0.87	0.95	V
	$I_F = 2\text{A}, T_J = 25^\circ\text{C}$		0.90	1.00	V
	$I_F = 1\text{A}, T_J = 125^\circ\text{C}$		0.80	0.90	V
	$I_F = 2\text{A}, T_J = 125^\circ\text{C}$		0.75	0.85	V
Reverse current @ rated $V_R$ per diode <sup>(2)</sup>	$T_J = 25^\circ\text{C}$	$I_R$	-	1	$\mu\text{A}$
	$T_J = 125^\circ\text{C}$		-	50	$\mu\text{A}$
Junction capacitance	1 MHz, $V_R = 4.0\text{V}$	$C_J$	20	-	pF

**Notes:**

1. Pulse test with PW=0.3 ms
2. Pulse test with PW=30 ms

<b>IMMUNITY TO ELECTRICAL STATIC DISCHARGE TO THE FOLLOWING STANDARDS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted)						
<b>Standard</b>	<b>Test Type</b>	<b>Test Conditions</b>	<b>SYMBOL</b>	<b>CLASS</b>	<b>Value</b>	<b>Typical</b>
AEC-Q101-001	Human body model(contact mode)	$C=100\text{pF}, R=1.5\text{k}\Omega$	$V_C$	H3B	$\geq 8\text{kV}$	N/A
IEC 61000-4-2	Contact mode	$C=150\text{pF}, R=330\Omega$		4	$\geq 8\text{kV}$	25kV
	Air-discharge mode	$C=150\text{pF}, R=330\Omega$		4	$\geq 15\text{kV}$	30kV
ISO 10605	Contact mode	$C=330\text{pF}, R=330\Omega$		L4	$\geq 15\text{kV}$	25kV
	Air-discharge mode	$C=330\text{pF}, R=330\Omega$		L4	$\geq 25\text{kV}$	30kV

<b>ORDERING INFORMATION</b>					
<b>PART NO.</b>	<b>PART NO. SUFFIX</b>	<b>PACKING CODE</b>	<b>PACKING CODE SUFFIX</b>	<b>PACKAGE</b>	<b>PACKING</b>
TSD2G (Note 1)	H	R5	G	SMB	850 / 7" Plastic reel
		R4		SMB	3,000 / 13" Paper reel
		M4		SMB	3,000 / 13" Plastic reel

**Note:**

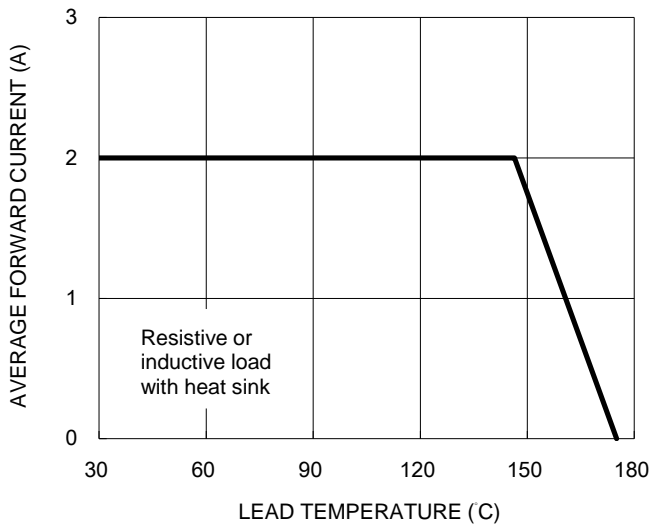
1. Whole series with green compound (halogen-free)

<b>EXAMPLE</b>					
<b>EXAMPLE P/N</b>	<b>PART NO.</b>	<b>PART NO. SUFFIX</b>	<b>PACKING CODE</b>	<b>PACKING CODE SUFFIX</b>	<b>DESCRIPTION</b>
TSD2G R3G	TSD2G	H	R4	G	AEC-Q101 qualified Green compound

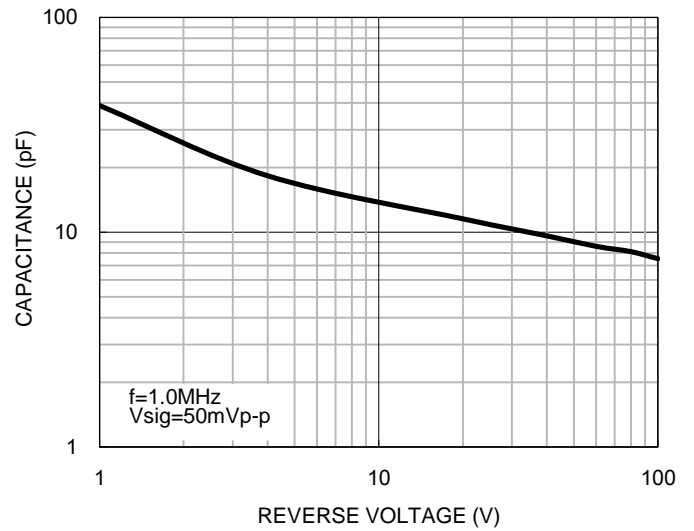
**CHARACTERISTICS CURVES**

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

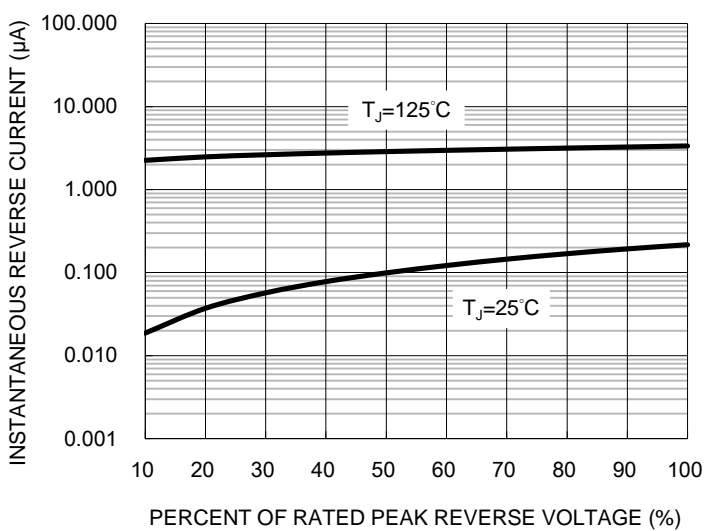
**Fig.1 Forward Current Derating Curve**



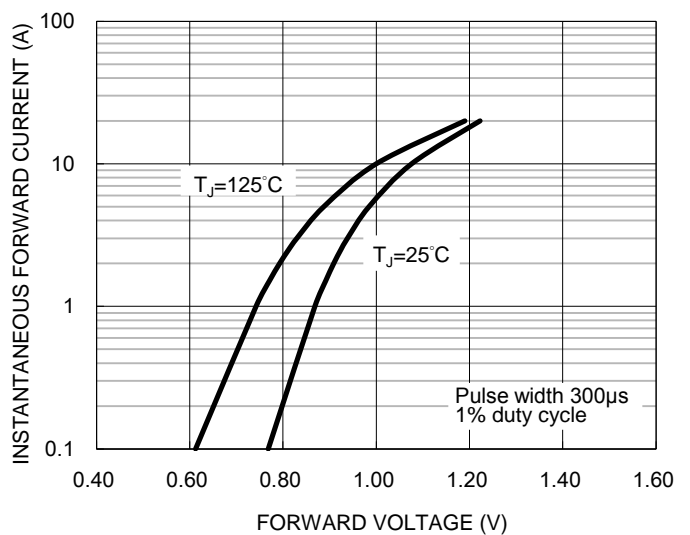
**Fig.2 Typical Junction Capacitance**



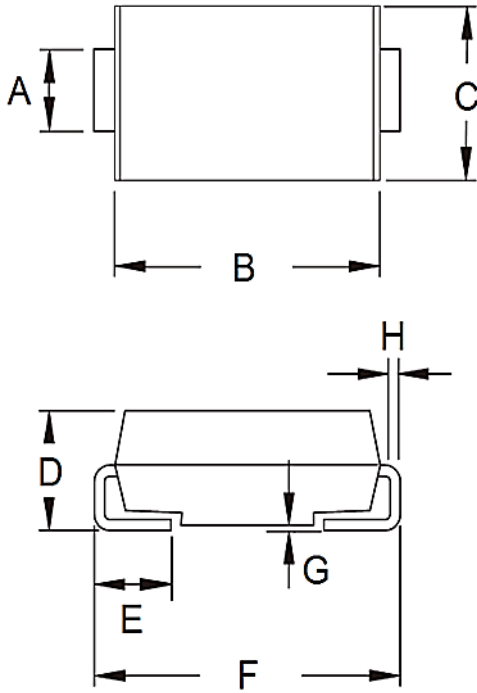
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**

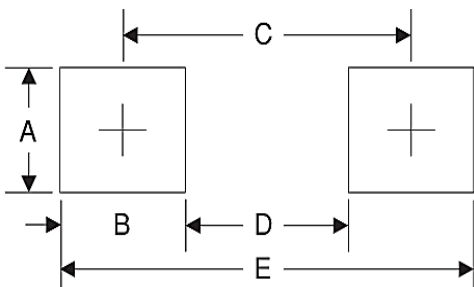


**PACKAGE OUTLINE DIMENSIONS**



DIM.	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	1.95	2.10	0.077	0.083
B	4.25	4.75	0.167	0.187
C	3.48	3.73	0.137	0.147
D	1.99	2.61	0.078	0.103
E	0.90	1.41	0.035	0.056
F	5.10	5.30	0.201	0.209
G	0.10	0.20	0.004	0.008
H	0.15	0.31	0.006	0.012

**SUGGESTED PAD LAYOUT**



Symbol	Unit (mm)	Unit (inch)
A	2.30	0.091
B	2.50	0.098
C	4.30	0.169
D	1.80	0.071
E	6.80	0.268

**MARKING DIAGRAM**



- P/N =Marking Code
- G =Green Compound
- YW =Date Code
- F =Factory Code

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